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REPORT OF AN ARCHAEOLOGICAL RECONNAISSANCE IN THE MOHAVE SINK REGION

BY

MALCOLM J. ROGERS

San Diego
California

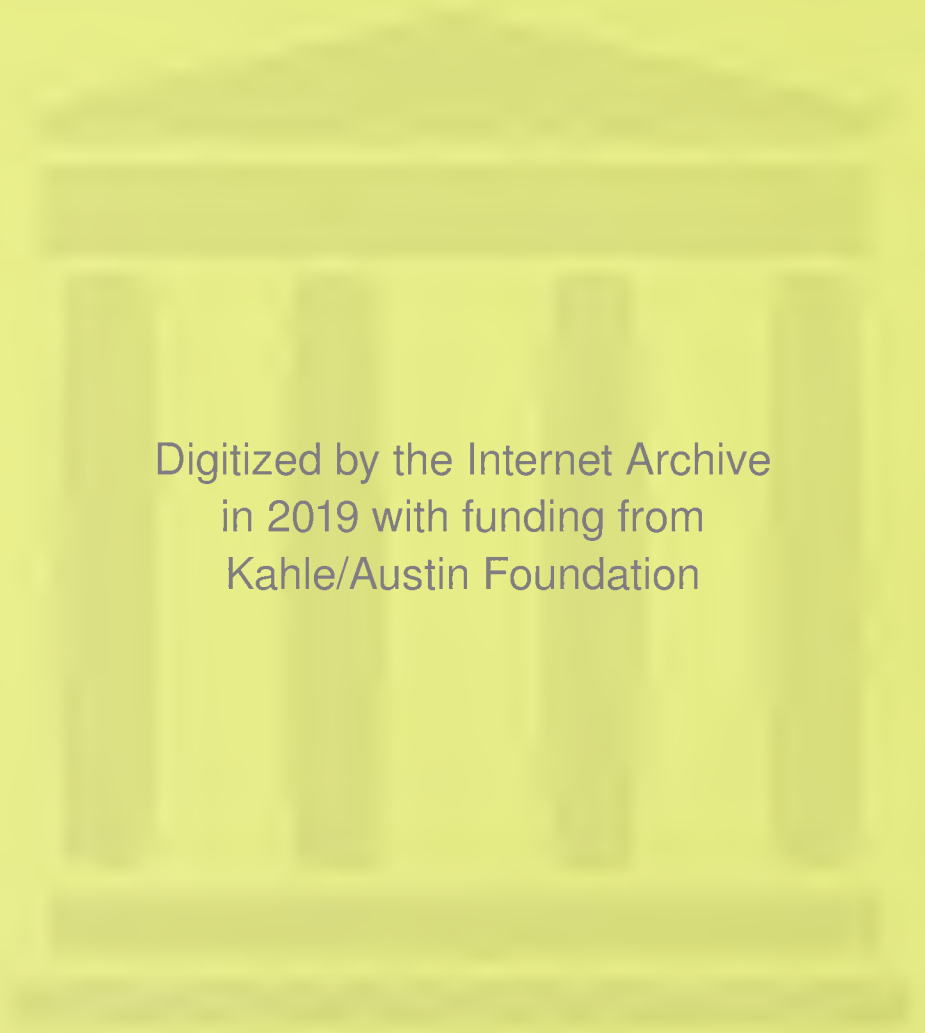

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PLATE I.

PREHISTORIC TURQUOISE MINE, TURQUOISE MTS., SAN BERNARDINO CO., CALIF.

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BY

MALCOLM J. ROGERS

The findings incorporated within this paper are in the main the results of a nine day survey made by the author, with the aid of four assistants, in October, 1928, for the San Diego Museum. The purpose of the expedition was to make a detailed examination of the prehistoric turquoise mines of San Bernardino County, California[1], with the express purpose of determining what people were responsible for them and at what period they had been worked. Sufficient evidence was obtained, I believe, to prove these mines to be the work of a Puebloan people, or an earlier related group, *e. g.*, the Post-Basket Makers (B.M.3).

When one hears the qualifying term "Puebloan" used he invariably thinks of cliff-dwellings and masonry architecture of the community type with all their affiliated industries; only the professional knows that this is also a very inclusive term of considerable latitude taking in the more modest beginnings of this culture. Professionally it has been made to serve a dual purpose: first, to designate a widespread Southwestern culture characterized basically by a sedentary agricultural life in stone or adobe villages, the manufacture of pottery and the use of the hand loom, and secondly, to mark time periods within this culture. Although such usage may be adequate to deal with the better worked-out cultural areas of the Southwest it is both inadequate and hazardous terminology to apply to the little known peripheral areas of the Southwest. However,

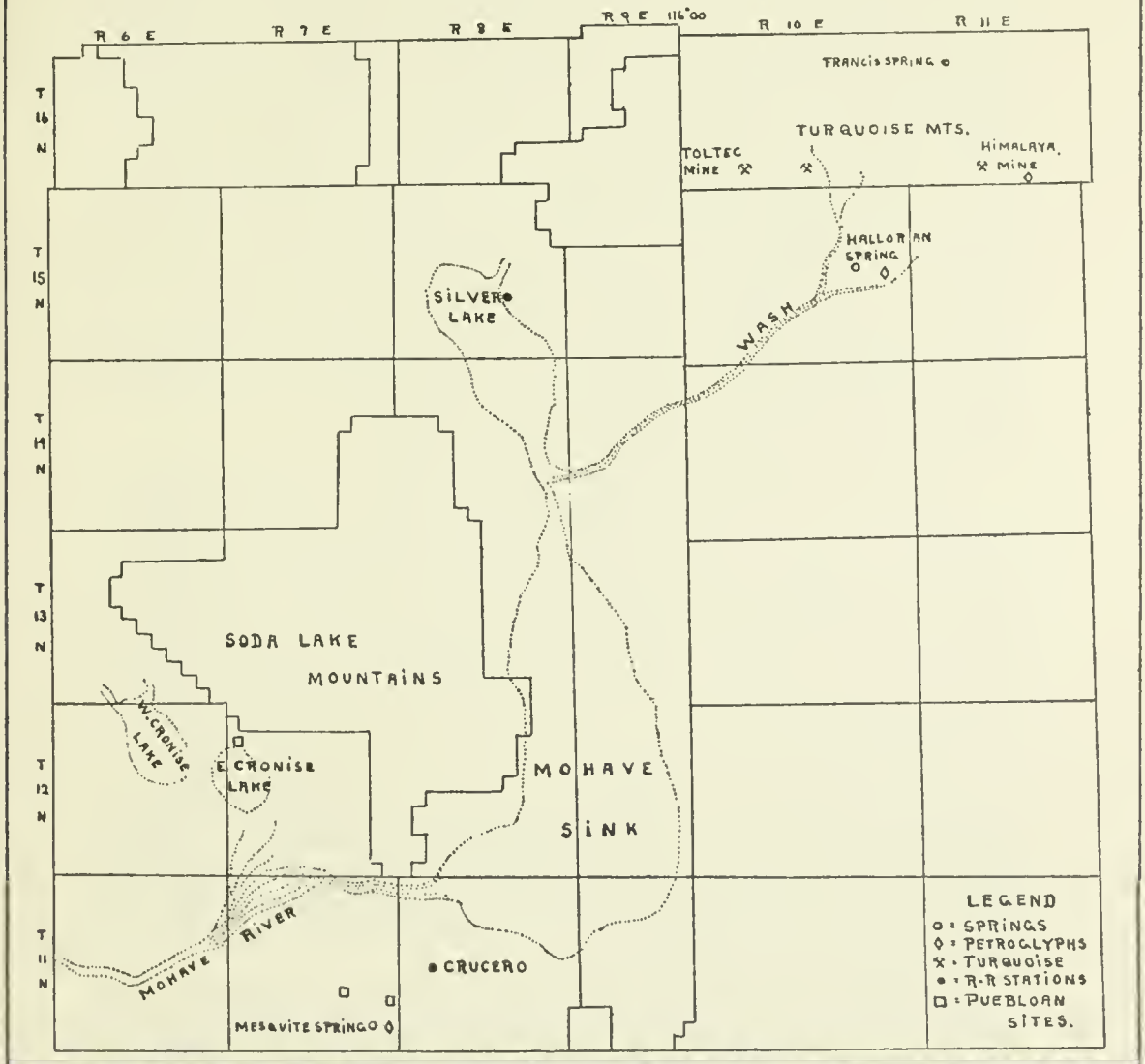
[1]The instigation of the present work was due to a brief preliminary survey of the region made by myself in April, 1926, which revealed the presence of Puebloan sherds at widely separated sites. My own attention was first drawn to the region through mining reports to which I refer the reader for the discovery and early history of these mines. Nineteenth Annual Report Min. Res. U. S., Part VI, p. 504, 1897-98. Twentieth Annual Report Min. Res. U. S., Part VI, pp. 582-584, 1898-99.

as we must have names for concepts it is best in such work to be concerned with the material evidence rather than with names. Therefore, throughout this paper the term Puebloan will not be used either in an architectural, nor a specific chronological sense, but only in a general way to designate any early Southwestern people with a typical Puebloan pottery technique.

The mineral turquoise, which was so highly prized and indefatigably sought for by the sedentary peoples of the Southwest, occurs in San Bernardino County, California, within a more or less definite zone extending from west to east through the north-central part. The most westerly occurrence known to the author is near Granite Wells, twenty-two miles east of Johannesburg. Pursuing the strike of this lode to the east, the mineral is next encountered in abundance in the Turquoise Mountains, ten miles northeast of Silver Lake. It is next found in quantity in the Crescent Mountains, Clark County, Nevada, and again, northeast of Searchlight. Across the Colorado River, ancient turquoise workings of the same nature are to be found in Mohave County, Arizona, east of Eldorado. The most easterly group of which I know is in Mineral Park in the Cerbat Mountains, Arizona. Throughout this extensive terrain of two hundred miles, the writer has seldom visited an outcropping of turquoise without finding distinct evidence of the mineral having been mined by the aborigines, as evinced by ancient open cuts, pits, and stone hammers. In cases where he has failed to find such evidence he has usually been assured by modern miners that it did exist prior to its obliteration by modern mining. One can not become familiar with the magnitude of this work and the crude means employed, without realizing that he is witnessing another monumental attestation of the diligence of early man in America.

It is, however, only with those mines in the Turquoise Mountains that this paper is primarily concerned. The main highway between Barstow and Las Vegas passes through these mountains and runs within two miles of some of the largest mines. Within this locus, there are three large groups of ancient mines. The west and east groups, which have been patented and worked by Americans, are known as the Toltec and Himalaya groups, respectively, and are situated eight miles apart, with an unnamed intermediate group lying three miles east of the Toltec group.

Mr. James Hyten, of Baker, informs me that his brother, William



MAP OF THE MOHAVE SINK REGION AND TURQUOISE MINES - SAN BERNARDINO CO. CALIF.

Hyten, now deceased, discovered these mines about thirty-eight years ago, but that he was the first to file claim to them in 1895. He was later employed to clean out some of the ancient diggings of the Himalaya group. He states that it took him and four other miners several months to muck out the largest pit, which is now known as the Tiffany mine. He gives the dimensions of this aboriginal working as being thirty feet long, twelve feet wide, and twelve feet deep. From this main pit, numerous short drifts or "gopher holes" extended, where the Indians had pursued promising veins. There is practically no soil at this site, and the entire excavation was conducted in bedrock. On plate I is shown an undisturbed prehistoric mine which lies one hundred feet west of the Tiffany mine. It is circular in outline, and measures thirty feet across from rim to rim. We sank a trench in the bottom of this pit to a depth of five feet without encountering bedrock.

In cleaning out these old diggings, numerous carapaces of the native tortoise were found, which Mr. Hyten believes were used by the Indians for scoops in carrying out the muck. In the bottom of the largest pit was found the shoulder-blade of a large animal. It had been ground into the form of a shovel. Mr. Hyten says that it was even larger than the scapula of an elk, the largest animal known to inhabit the region in recent times. This implement was unfortunately allowed to rot on the dump.

At the Toltec and Middle groups, the surrounding contours are extremely rugged and the ancient diggings are badly eroded. It is often impossible to distinguish a man-made cut from a natural ravine. Most of the ancient mining here was conducted by running open cuts upon the steep sides of the canyons.

At the Himalaya group, the terrain is more in the nature of a plateau, and the mines have been better preserved. Most of the work in this area was conducted by sinking pits. During the hundreds of years which have elapsed since they were dug, erosion has carried most of the dumps back down into the pits, and in some cases has nearly refilled them. They now appear like shallow craters dotting the plateau.

We confined most of our efforts to this group because of the more favorable conditions here for the preservation of artifacts. At the other two groups, we found little evidence of the presence of the ancient miners aside from their actual work, and at none of the mines was any

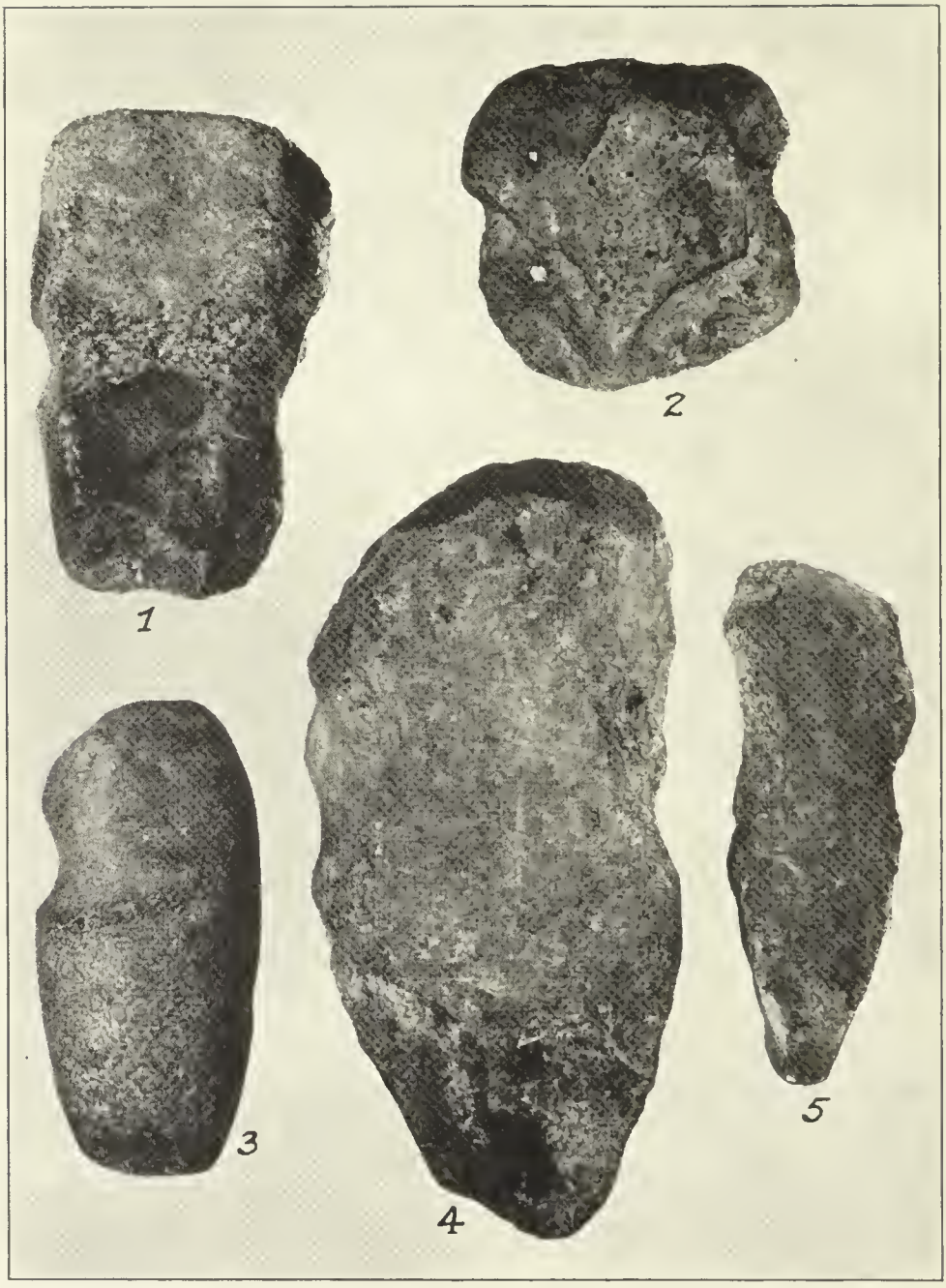


PLATE II.

STONE TOOLS FROM THE TURQUOISE MTS., SAN BERNARDINO CO., CALIF.

No. 1—Hammer. No. 2—Axe. No. 3—Greenstone Hammer. No. 4—Pick. No. 5—Pick. Natural Length of No. 4 is 11 inches.

indication of an habitation found. On taking into consideration the waterless, inhospitable nature of the region, it is reasonable to suppose that no permanent settlement was made at the mines; at most, the miners only camped there. As their artifacts were found only in and about the mines, it is possible that they actually camped in the mines themselves.

Although many of these mines have been obliterated by modern work, especially at the Toltec group, it is possible to identify with certainty fifty aboriginal workings at the Himalaya group, twenty at the Middle group and for the Toltec group, I take Mr. Hyten's estimate of two hundred, this count having been made prior to modern disfiguration.

At all the turquoise sites visited, stone mauls, picks, and axes were found in varying numbers. They are particularly abundant about the Himalaya mines, possibly because of the flatness of the terrain. A great number of these implements, especially the finer specimens, have been carried off during the last thirty years, and many have become buried under the modern dumps; yet we picked up forty-five at the Himalaya mines during two day's work.

These implements may be divided into two distinct classes upon the basis of both material and fabrication (see plate II). The numerically superior group is made from the local basalt which caps much of the plateau. Members of this group are all crudely made from naturally-formed pieces of basalt which came the nearest in form to the shape desired. These potential hammer-heads were usually only roughly nicked in the median region for hafting, although some have carefully ground grooves about them, either of the full or three-quarter type. If a pick or axe form was desired, the ends were sharpened by percussive flaking. As to the manner of hafting, one can only theorize. Because of the irregular outline of most, a pliant haft such as a split green stick would be essential. Harrington found such haftings almost intact in the ancient salt mines along the Virgin River of Nevada[2]. It is quite evident that wedges were used on many of the turquoise mine hammers, for the sides are often polished from the working of the wedges. Three specific forms occur in this group; a blunt-nose hammer, a sharp-nose pick, and a chopping type similar to the double-bitted axe. Some of

[2]M. R. Harrington. A Hafted Stone Hammer from Nevada. Indian Notes. Museum of the American Indian. Vol. 4, No. 2, page 127. New York. 1927 .

these hammers are very large, and weigh as much as eight pounds. (Plate II, No. 4.)

The numerically minor group shows far superior technique, and is of a material foreign to the immediate vicinity, viz., greenstone. These hammers have all been carefully pecked and ground into symmetrical forms. They exhibit the same three forms as described in the other group, and generally carry a full groove, although we found one three-quarter grooved hammer similar to those of southern Arizona. In passing, it would seem pertinent to call attention to the fact that at the nearest-known center of Puebloan culture, *i. e.,* Pueblo Grande de Nevada, no grooved axes were found[3].

In and about the undisturbed mines at the Himalaya group, about twenty-five Puebloan-type sherds were found. They were all of a plain gray ware except one which had two black bands on it. Two different base-clays are represented by these sherds; a white paste almost free of inclusions, and a gray paste, thick with coarse inclusions. As the sherds were all small, little knowledge could be gained as to the original forms. Judging from the surface treatment, they were mostly bowl sherds. In the group was the rim of a very small-mouthed canteen. No Mohave sherds were found at any of the mines.

At the Himalaya mines, two spear points were found on the surface. Each one represented a distinct type. The smaller of the two has a crude chipping technique, and carries but a simple V-notch in the base for hafting. It is of porphyry; is two and a half inches long, and is slightly patinated. The other point is three inches long, and of excellent technique. It is deeply side-notched just above the stem, is composed of porphyry but of different magmatic origin from the other, and is not patinated. It is possible that these articles are atlatl spear points, but being unassociated with a clear cultural horizon, their origin must remain doubtful. Further work in the region disclosed a very prolific and widespread chipped-stone culture of a similar nature, but we failed to tie it in with either the Basket-Maker, Puebloan, or Mohave Cultures, as all were surface finds.

All of the few water-holes to be found in the Turquoise Mountains, and many caves, were visited with the expectation of proving a permanent occupation of the region by the turquoise workers, but with

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[3]M. R. Harrington. A Primitive Pueblo City in Nevada. American Anthropologist. Vol. 29, No. 3, p. 271. 1927.

scant success. Cave excavation produced a nondescript culture chiefly characterized by a paucity of artifacts. Flaked stone, an occasional broken metate, animal bones, and plain brown and gray sherds were all we could find, besides some interesting beds, composed of arrowweed, carriso, and galleta grass. Only the grass is now found in these mountains. No turquoise was found in any of the cave shelters, but in a large one which is one mile south of the Himalaya mines, an unworked chunk of chrysocolla was found in a bed. This mineral is closely associated with turquoise in the mines.

Water is not attainable at any of the mines. The Himalaya mines are situated the nearest to water (Francis Spring), and that is five miles to the northwest. Six miles to the southwest lies Halloran Spring. Here we found evidence of extensive occupation, judging not from the abundance of material, but from the area covered.

On all open sites in the region, archaeological material is extremely scarce, and seldom in place, making interpretation particularly difficult. Then, too, this is a virgin ceramic area of which nothing is known. To meet this situation, I had but a cursory knowledge of Nevada Puebloan and late Mohave types; of archaic Mohave pottery, I had none. Of all the sherds gathered from the Turquoise Mountains, I have been able to identify not more than five percent. In this percentage are included about equally Puebloan, Mohave, and Archaic Lower Colorado types[4]. The remaining ninety-five percent are plain nondescript sherds made from local clays, and might be of either Mohave or Puebloan origin, or both.

Of all the sites in this region, excluding the mines, the Halloran Spring site produced the most Puebloan artifacts, and possibly was a temporary camp of the turquoise miners. One greenstone hammer, three basalt hammers, plain white and gray Pueblo sherds, black on white, and black on red sherds were found, as well as flat Pueblo type metates. House architecture here must have been of a simple nature, and of some surface type; at least, nothing of a subterranean type has survived. Spear points were found, but no arrowpoints.

Petroglyphs are fairly common in these mountains, and two different types exist, probably representing two different cultures. Quite

[4]This is a red-slipped ware characteristic of a Pre-Yuman culture on the Colorado River, which I first encountered in 1925, but as yet, have had no opportunity to formally report. Lack of space precludes a description of even the ceramics of this culture.

fresh-appearing ones occur superimposed on old ones of entirely different nature. I have seen both types before in the desert regions of southeastern California, but never superimposed.

It was with the hope of finding a more definite Puebloan occupation of California that we removed our activities to the south end of the Mohave Sink; we were not disappointed. Here the ecology is, or has been, more favorable to such a culture. Flowing from the southwest, the Mohave River, which is now dry most of the year in its lower reaches, drops into a series of large basins which may be likened unto giant steps descending leisurely into that master sink, Death Valley. Topographical changes have been very rapid within this region, that is, with regard to our usual conception of geological time. Alluvial fans have advanced rapidly from adjacent mountains into the Mohave River Valley, first diverting it and eventually damming it back to form large fresh water lakes, as is evinced by anadonta shells, fish bones, and the travertine on shore line rocks. These lakes are now dry except during exceptionally heavy run-offs.

The two Cronise Lakes, situated just west of where the Mohave River enters the Mohave Sink, and into which the river sometimes empties, have had water in historic times; both are completely surrounded by Indian camps and villages. At East Cronise Lake, wave-cut terraces on some of the older sites show that they have been partially covered by water since their abandonment.

If agriculture, such as corn culture, was ever practiced in the Mohave Desert, this locus has always seemed to me to have offered the most favorable environment. If the overflowing of the lower reaches of the Mohave River and its sinks was fairly periodical, corn-culture could have been conducted as it was by the Yuman peoples of the Colorado River. The only evidence that we could find indicative that corn was grown here is the great number of metates and manos present. It is well known that mesquite beans were pounded green in mortars, which are also present, and there is no seed native to the region necessitating the presence of so many large metates. The latter are of two types: the flat Pueblo type (without raised margins), and the oval basin type of the Pacific Coast. The first type is numerically dominant. The manos correspond in shape to the metates.

The region still possesses a considerable mesquite tree growth, and evidence, in the way of dead stumps, of having had much more. Wher-

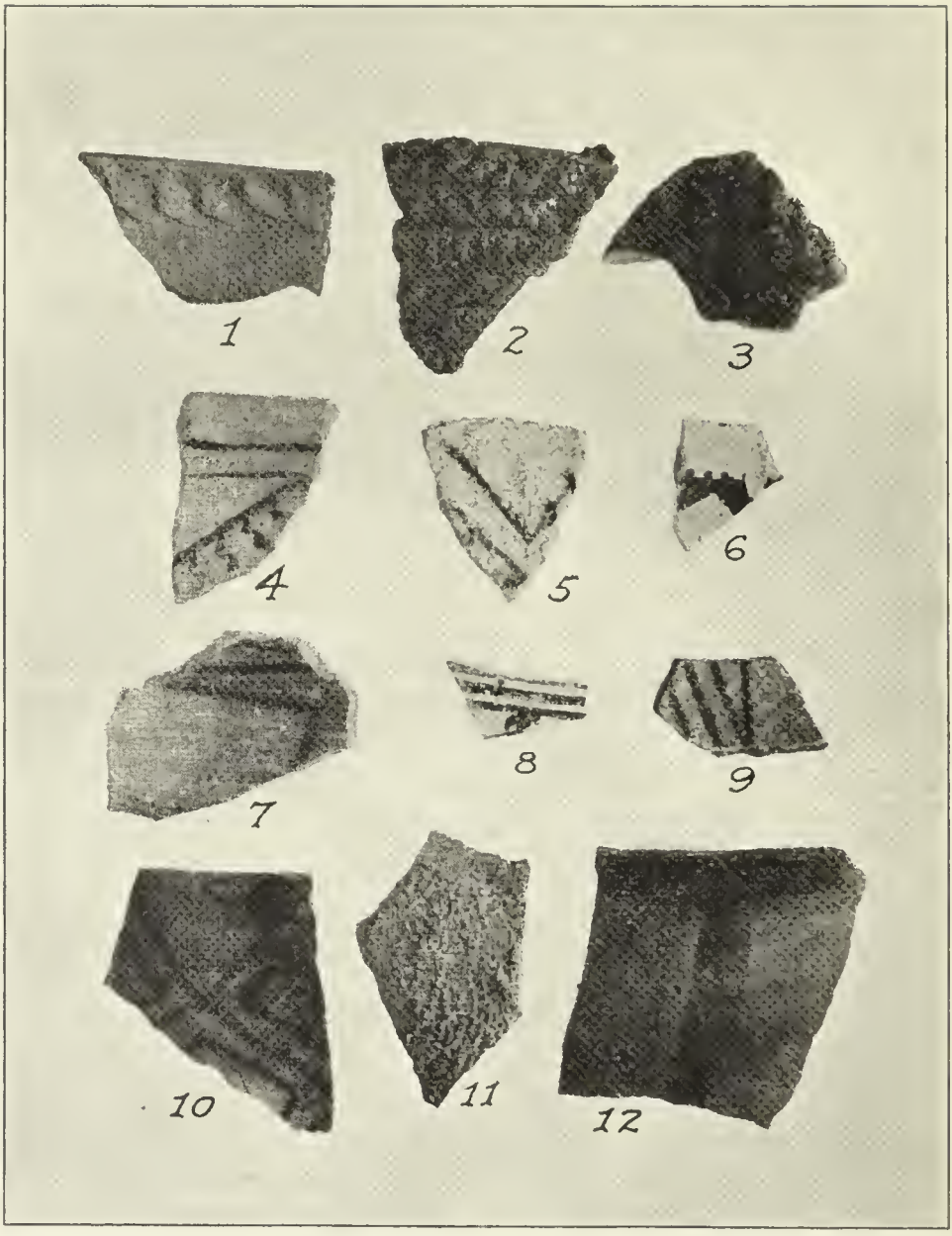

PLATE III.

SHERDS FROM THE MOHAVE SINK REGION, CALIFORNIA

Numbers 1, 2 and 3—Indented-ware, E. Cronise Lake. No. 4—Black-on-Gray, E. Cronise Lake. No. 5—Black-on-White, Crucero. No. 6—Black-on-White, Halloran Springs. No. 7, and No. 9—Black-on-Red, E. Cronise Lake. No. 8—Jeddito Yellow, E. Cronise Lake. No. 10—Mohave Incised and Red-on-Buff. No. 11—Mohave Daubed-ware. No. 12—Mohave Red-on-Gray. Nos. 10, 11, 12, from East Cronise Lake.

ever these trees are found, the usual "mesquite camps", which are so characteristic of the California deserts, are to be found. Groups of small cobbles which were used for hearths mark the house sites, along with chipped stone, sherds, and broken metates. The latter are seldom found whole, as among the Yuman tribes it was customary to sacrifice them at cremations, also to smash them and all other artifacts which could not be carried away, when leaving a camp permanently. These "mesquite camps" are invariably located either on the sides of, or in crater-like depressions within, the sand dunes which pile up about the trees. In these craters, it was often possible to find cremations which were but little disturbed. Such sites offered the only pure Mohave cultural material free from intrusive material.

The ceramics of the region, also, seems at first glance beyond understanding, for one finds sherds which are probably two thousand years old side by side with those of the eighteenth and nineteenth centuries. After classifying the sherds from various sites, however, it is immediately seen that the type percentages are far from constant, and that great variability is shown between sites but a few hundred feet apart. It would be rather futile to discuss here in detail all the ceramic types present, because of the absence of a known cultural background. Until some cultural stratigraphy is found for the region, much must remain in a hypothetical realm.

Throughout the Sink region, and at nearly every water-hole visited, Puebloan sherds were found sparingly mixed in with Mohave sherds and other sherds of unknown origin. This sherd group of unknown origin constitutes at least ninety percent of the ceramics of the region. Judging from the sherds found in Mohave cremations, the Mohaves made a plain gray ware of almost, if not quite, the identical clay used by the Puebloan people of the region. It is usually several shades darker, however. If we may safely assign this ware to the Mohaves, it would cut deeply into the ninety percent unknown group. The Mohaves must have abandoned the Sink at quite an early date, for late Colorado River sherds of the red on buff and red on gray types are only sparingly represented. At East Cronise Lake, an earlier Mohave type, "daubed-ware" (Plate III, No. 11)[5], is quite strongly represented. Several new

[5]This is a cooking ware which is distributed over almost the entire Yuman area in the southwest. It possesses a very coarse-textured slip, which has the identical appearance of rough stucco work.

Mohave ceramic types were encountered of which the most arresting is a buff ware which is both incised and painted with red. (Plate III, No. 10). The sherds of this region are so small that little can be gained as to pottery forms. The bowl rims show, however, that Mohave bowls usually had recurved sides with squared rims and Pueblo bowls straight sides with tapered rim edges.

Of all the Puebloan wares found in the region, only the plain gray, white, and black on gray seem to be indigenous for reasons which will be discussed further on. Late Pueblo types of black on white, black on red, and Hopi ware (Jeddito yellow) occur very sparingly and were, I believe, trade ware, imported by the Mohaves, especially the Hopi sherds which were found in only one site on the north side of East Cronise Lake. No true corrugated ware was found, but a pseudo-type is present. The broad coils in this type are partially obliterated about the neck and sides and wholly on the base. It usually carries irregular rows of indentations on the upper parts. The technique is crude. It is sparingly represented, but I believe it to be of local origin because it is made from local clays which burn gray and red. Several plain white sherds were found, which I would allocate to Pueblo Grande de Nevada because of the characteristic green epidote crystals which are to be found as inclusions in so much of the white ware from this pueblo.

On the northwest shore of East Cronise Lake is a site whose Puebloan attributes are sufficiently strong to identify it as a permanent village of these people. At this place, the shore-line rises rather abruptly to form a low ridge about fifteen feet high. This ridge parallels the shore-line, and is composed of thin-bedded strata of sandy silt, probably a residual block of more ancient lake deposits. It is loosely consolidated and erodes easily. Back of this ridge and over the top of it, sand has drifted to the average depth of six feet; but the lake side is devoid of both sand and vegetation, and is badly washed. This side has a distinct terraced effect as if from wave action. It is quite evident that the lake has at some time partially submerged this ridge. Whether or not this inundation preceded man's occupation of the site is difficult to determine, but I believe it to have been subsequent to the first occupation. At the base of the ridge, where the last lake has left a distinct shore line, many sherds can be found with a coating of travertine of the same nature as found on the opposite rocky shore to the south.

On the terrace, house floors may be recognized by circular discol-

ored areas. The entire slope is strewn with chipped stone, broken metates and manos, sherds, and small cobbles which were brought here for house structure. No house foundations were found, but it is possible that some have been preserved by the sand dune which covers two-thirds of the ridge. There is no evidence here of sunken house floors of the pit-house type, so the house walls must have rested directly on the natural ground surface. The walls were probably constructed of alternating tiers of adobe and cobbles, which seems to have been the characteristic wall-structure used throughout the Puebloan area of Nevada.

This site yielded the highest percentage, 48%, of Puebloan gray sherds of any in the entire region, also a few black on gray, and black on red sherds. Many of the plain gray sherds show traces of having been polished and decorated in black at one time, but being surface sherds they are badly eroded. Undoubtedly the percentage of decorated ware here was greater than is now apparent. Some of the plain gray sherds are indistinguishable from those found in and about the turquoise mines. Only a negligible percentage of Mohave sherds was found here, but these gradually rose to a dominant percentage as the ridge was followed to the east, there being a continuous occupational area, one mile long, on this side of the lake.

At a low saddle in this ridge where rain water had cut through from the back country, remains of several Mohave cremations were found in situ. A few feet to one side of them and on a level one foot lower, an inhumation was uncovered. Fully one-half of the skeleton had been washed away, and the remainder was badly decayed. Careful exposure of the remaining parts showed the legs to have been flexed and the torso more or less twisted to the left. The head was to the north, and the face to the east. As the skull was on a lower level than the body bones, it had suffered less. It is brachycephalic in type and undeformed. About the neck were fourteen large cylindrical shell beads made from the Pismo clam (*tivela crassatelloides*). Only one other such bead was found in the region. If mortuary offerings had been included with this burial, they had been completely washed out. This may be an aberrant Mohave burial, but it seems more likely that it is a Puebloan.

The chipped-stone work of this region offers an interesting and puzzling study. Because of the extreme degradation which this region

has undergone, one finds knives and scrapers of the crudest technique scattered about on the surface with knives, spearpoints, and arrowpoints whose structural elegance can be equalled in Southern California only by those of the Channel Islands culture. Perhaps this is connotative of trade relations, for Pacific Coast shellwork is fairly common here. In making these implements, a great variety of stone was employed, but in the main agate, flint, chalcedony, and jasper predominate. Considerable variation in form is also exhibited; but to go into this work in detail, which the subject warrants, would occupy too much of the space available in this report. Of all such work, only certain arrowpoint types have been identified as Mohave, through association with their cremations.

The shell and bead work of this region is exceptionally fine, and varied in nature. Stone beads as well as shell beads are quite common in Mohave cremations. The former vary a great deal in size and quality, the smaller ones being of finer workmanship and sometimes carved on the perimeter. These stones heads are made from both pink and white feldspar. Surface finds included, besides these types, beads of the following nature: whole olivella (*olivella dama*), olivella disk beads (both chipped and ground), haliotis disks or rings, "tinklers" or bells (*conus purpurascens*), clamshell beads of the type from the Santa Barbara Channel, and a purple shell bead which has not been identified. The finest specimen of shell-work came from West Cronise Lake. It is a piece of filigree work ground from a *glycymeris multicostata* shell. Other carved fragments of this kind of work were found in limited number, *e. g.*, such as bracelets.

SUMMARY

Although the extensive turquoise mining industry is in itself confirmatory of a Puebloan people having either visited this region intermittently over a very long period, or having lived permanently in the region an equal length of time, it has not yielded, as yet, sufficient cultural material to properly place it in the scheme of Southwestern chronology. Perhaps, when M. R. Harrington's work on the Nevada field becomes available, this culture can be properly allocated, as it is quite apparent that we are dealing with a peripheral extension of the Nevada field.

On the other hand, there is no doubt that the Mohave Sink region had a scattered but permanent Puebloan population. Besides the East Cronise Lake site, several other widely separated sites in the south end

of the Sink, produced dominant percentages of Puebloan-type pottery; so, though the region may never have had any large settlements, it certainly had many small sites and single houses scattered over a considerable area. This condition coupled with the archaic nature of the pottery, reflects a social organization which preceded the true Pueblo period, and which is characteristic of the Basket-Maker III culture of Nevada, as determined by Kidder[6].

Perhaps further reconnaissance work in this area will disclose less-disturbed sites with stratigraphical value. Until some such find is made, little progress can be made toward solving its perplexing cultural history. Some of the most interesting problems are the following: Why has the region failed to produce a single piece of turquoise, worked or unworked, outside of the mines, where it is very abundant? Was this part of California abandoned by the B. M. III people previous to the spread of the true Pueblo culture, or did the latter reach this region and produce the true Pueblo sherds which are to be found here? Did the appearance of the Mohave people with a diverse culture follow directly the B. M. III culture, or was there an hiatus? To whom should the fine chipped-stone industry be attributed? Neither the Puebloan nor Yuman peoples are known to have produced such knives and spear-points as are found here. Although the Basket-Maker people used spears, our cave explorations, as yet, have failed to produce these spear-points or any other evidence of Basket Maker culture.

While at present, the local cultural chronology seems a hopeless matter, the presence of so much intrusive pottery gives promise of a solution, once the key is found. These foreign sherds involve the early cultures of Nevada, Northern Arizona, and the Colorado River region which later can be tied in with southern Arizona. With so much to work with, it would seem to be but a matter of time before the western peripheral cultures of the Southwest, and their relations, will be correlated.

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[6]M. R. Harrington, op. cit., p. 276.

OTHER TITLES AVAILABLE IN THIS SERIES

San Diego Museum Paper No.2, February 1936.
YUMAN POTTERY MAKING by Malcolm J. Rogers.

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